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CERTIFICATION

I, the below named translator, hereby declare that: my name and post office address are as stated below; that I am knowledgeable in the English and German languages, and that I believe that the attached text is a true and complete translation of PCT/EP2004/052632, filed with the European Patent Office on October 22, 2004.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Description

Method for carrying out a survey of a plurality of participant communication devices, and corresponding communication devices

Conventional radiophones, which are known for example by the name Walkie-Talkie, allow speech messages to be sent in real time to one or more partners. During speech the transmitting party presses a specific speaking key. As a result he blocks other participants from speaking. Transmission takes place therefore according to a semi-duplex system. Communications services of the semi-duplex system type are also called PTT services (PTT: Push To Talk). The current Push-to-Talk services generally only allow transmission of speech messages.

The object of the invention is to carry out a survey of a plurality of participant communications devices in a simple manner. This object is achieved by the following method according to the invention:

Method for carrying out a survey of a plurality of participant communications devices, wherein only one of these communications devices in each case is assigned an exclusive transmission right to transmit at least one useful message during an authorization period, on the basis of its specific request signal, while the other participant communications devices are only assigned a reception right to receive at least one useful message, and wherein the communications device authorized to transmit determines a time response window for the survey of the participant communications devices, within which window it is possible for the respective participant communications device to provide its

1 respective response signal to the survey in that it sends at
2 least once its own specific request signal as the response
3 signal for requesting the exclusive transmission right.

4
5 As a result of the fact that the respective participant
6 communications device provides its respective response signal
7 to the survey, that it sends at least once its own specific
8 request signal as the response signal, it is possible to use
9 the existing functionalities of the participant
10 communications devices without modification to carry out a
11 survey. Thus communications devices that are already in use
12 can be used to carry out a survey without any special
13 modification.

14
15 As a result of the method according to the invention,
16 different types of survey may advantageously be carried out.
17 These include surveys with Yes/No responses, with one
18 response from a plurality of possible responses, with
19 multiple responses from a plurality of possible responses, or
20 with responses which require a text to be input. The text is
21 input into the communications device in the form of a Morse
22 code for example.

23
24 Simple handling of the conducting of a survey, both for the
25 communications device authorized to transmit and which
26 initiates the survey, and for the other participant
27 communications devices which participate in the survey, is
28 also achieved.

29
30 The invention also relates to a communications device
31 authorized to transmit for carrying out a survey of a
32 plurality of participant communications devices, comprising a
33 reception unit for receiving its exclusive transmission right
34 to transmit at least one useful message during an

1 authorization period, on the basis of its specific request
2 signal, while the other participant communications devices
3 can only be assigned a right to receive at least one useful
4 message, comprising a processing unit for determining a time
5 window within which it is possible for every communications
6 device participating in the survey to provide its respective
7 response signal to the survey in that it sends at least once
8 its own specific request signal as the response signal for
9 requesting the exclusive transmission right, and comprising a
10 transmission unit by means of which its response signal can
11 be sent by sending at least once its own specific request
12 signal to request an exclusive transmission right.

13
14 The invention also relates to a communications device
15 authorized to receive for carrying out a survey of a
16 plurality of participant communications devices, comprising a
17 transmission unit by means of which its response signal can
18 be sent by sending at least once its own specific request
19 signal to request an exclusive transmission right.

20
21 Other developments of the invention are recited in the sub-
22 claims.

23
24 The invention and its developments will be described in more
25 detail hereinafter with reference to drawings, in which:

26
27 Fig. 1 shows, in a schematic diagram, an arrangement
28 for carrying out a survey of a plurality of
29 participant communications devices according
30 to a first variant of the method according to
31 the invention and associated modifications,
32 and

33

Fig. 2 to 5 show different variations of response signals which may be provided by the respectively responding communications device when carrying out different variations of the survey method according to the invention.

Elements with the same function and mode of operation are provided with the same reference numerals in Fig. 1 to 5.

Fig. 1 shows an embodiment for a PTT system (Push-to-Talk). A service of a PTT system is called a PTT service. A possible specification for a PTT system is given for example in the document "Push-to-Talk over Cellular (PoC), Architecture v.1.1.0, PoC Release 1.0, at "http://www.ericsson.com/multiservicenetworks/distr/PoC_specifications.ZIP".

This Push-to-Talk system has a star-type organization. A central PTT server PS, which is connected to all participant communications devices KE1, KE2, KE3, is located in the center of Fig. 1. The PTT server PS controls the PTT service and distributes the relevant communications signals to the participant communications devices KE1, KE2, KE3.

Within the scope of the invention the term "communications device" includes a mobile communications device according to the UMTS standard (UMTS - Universal Mobile Telecommunications System) or according to the GSM standard (GSM - Global System for Mobile). According to a further embodiment a communications device can be produced as a landline device, for example as an ISDN terminal (ISDN - Integrated Subscriber Digital Network) or as a computer unit connected to the public internet and/or intranet.

1 A PTT service is conventionally characterized in that only
2 one of the communications devices in each case, such as KE3,
3 is assigned an exclusive transmission right to transmit at
4 least one useful message, such as NN, NN2, during an
5 authorization period, such as BT. During this authorization
6 period BT the other communications devices, such as KE1 and
7 KE2, participating in the survey are only assigned a
8 reception right to receive at least one useful message NN,
9 NN2. Useful messages NN, NN2 are transmitted in this case
10 according to a semi-duplex system. The useful message NN, NN2
11 is delivered in real time to the communications devices KE1,
12 KE2 authorized to receive. The useful message NN, NN2 can
13 *inter alia* comprise multi-media data, such as audio data,
14 video data or text data.

15
16 In Fig. 1 the communications device KE3 has the exclusive
17 transmission right to transmit useful messages NN, NN2. It
18 comprises a transmission unit SEE3 for sending one or more
19 signal(s) and/or message(s) and a reception unit EME3 for
20 receiving one or more signal(s) and/or message(s). In
21 addition there is an evaluation unit AWE for evaluating the
22 survey and a management unit VAE3 which controls the survey
23 for example. Finally, there is also an interconnecting
24 network VX3 which allows the exchange of information between
25 the various units SEE3, EME3, AWE and VAE3 of this
26 communications device KE3.

27
28 The communications devices KE1, KE2 in Fig. 1 are also only
29 authorized to receive at least one useful message NN, NN2.
30 They have a respective transmission unit SEE1, SEE2 for
31 sending one or more signal(s), and/or message(s) and a
32 respective reception unit EME1, EME2 for receiving one or
33 more signal(s) and/or message(s). They also include a
34 respective management unit VAE1, VAE2 to generate the

1 respective response signal AWS1, AWS2 for example. In
2 addition a respective interconnecting network VX1, VX2 is
3 provided which allows the exchange of information between the
4 various units SEE1, EME1 and VAE1 and SEE2, EME2 and VAE2
5 within the respective communications device KE1, KE2.

6
7 The course over time for carrying out a survey will be
8 described in more detail hereinafter with reference to Fig.
9 1. This survey is initiated by communications device KE3.
10 Once the communications devices KE1, KE2, KE3 participating
11 in the survey have registered with the PTT server, the
12 communications device KE3 sends its specific request signal
13 FS to the PTT server PS. It thereby requests the exclusive
14 transmission right to transmit useful messages NN, NN2. The
15 PTT server PS then decides whether the exclusive transmission
16 right can be assigned to the communications device KE3 making
17 the request. As no other communications device KE1, KE23, KE3
18 has been assigned the exclusive transmission right, the PTT
19 server PS assigns the exclusive transmission right to the
20 communications device KE3 making the request by means of a
21 positive acknowledgement message PBN. The communications
22 device KE3 authorized to transmit accordingly has the
23 possibility, within the authorization period BT, to send at
24 least one useful message NN, NN2 or to also initiate at least
25 one survey.

26
27 At the start of the survey the communications device KE3
28 authorized to transmit transmits at least one useful message
29 to the PTT server which forwards this in real time to the
30 communications devices authorized to receive. This useful
31 message contains a question and possibly also a choice of
32 possible responses to the survey. This useful message can
33 optionally be configured in the form of a speech message or a
34 text message. In this embodiment the communications device

1 KE3 sends the useful message NN with the following question
2 to the PTT server PS: "Shall we go for dinner? Please answer
3 with Yes or No". As soon as it has received this useful
4 message NN the PTT server PS forwards it to the
5 communications devices KE1, KE2.

6
7 A time window is then started by the communications device
8 authorized to transmit, within which it is possible for the
9 communications devices KE1, KE2, KE3 participating in the
10 survey to provide their respective response signal AWS1,
11 AWS2, AWS3 to the survey. It may be advantageous to
12 communicate the start of the time response window, for
13 example by means of an audio signal, to the communications
14 devices participating in the survey. Thus a first audio
15 signal can be generated for example by pressing a survey key
16 STN on the communications device KE3 authorized to transmit.
17 This signal is incorporated into the useful message NN and
18 transmitted to the other communications devices KE1, KE2
19 participating in the survey. In an alternative variation, a
20 text message is transmitted to the communications device
21 participating in the survey, which message indicates the
22 start of the time response window TU. In this embodiment the
23 communications device KE3 authorized to transmit adds the
24 following additional text to the useful message NN with the
25 question: "Please give your answer now".

26
27 At the same time, or in advance, the communications device
28 KE3 authorized to transmit informs the PTT server PS about
29 the start of the time response window TU by means of a survey
30 status message VSQ. The PTT server PS can optionally not
31 allow any new communications devices for this PTT service
32 during the time response window TU. In addition the server
33 can buffer the specific request signals FS sent within the
34 time response window TU by the communications devices KE1,

1 KE2, KE3 participating in the survey for subsequent
2 evaluation of the survey.

3
4 Once the time response window has started, the communications
5 devices participating in the survey have the opportunity to
6 provide their respective response signal to the survey. It is
7 advantageous that the specific request signal, such as FS, is
8 sent at least once. In the present embodiment the "Yes"
9 response is provided by sending the specific response signal
10 FS once and the "No" response by sending the specific
11 response signal FS twice. The communications device KE2
12 answers "yes" in response to the survey. The communications
13 devices KE1, KE3 answer "No". The communications device KE2
14 thus sends its specific request signal FS to the PTT server
15 PS once for its response signal AWS2. The other two
16 communications devices KE1 and KE3 transmit their respective
17 specific request signal FS twice in each case. Their response
18 signals AWS1, AWS2 are thus comprised of two respective
19 specific request signals FS which are surrounded in Fig. 1 by
20 a broken ring.

21
22 After reaching the end of the time response window, no
23 further response signals from the communications devices
24 participating in the survey are taken into account. The end
25 of the time response window can for example be announced by a
26 second audio signal. This is sent by the communications
27 device authorized to transmit, such as KE3, by means of a
28 further useful message, such as NN2, to the PTT server and
29 subsequently to the other communications devices
30 participating in the survey, such as KE1 and KE2. In addition
31 it is possible for the end of the time response window to be
32 determined at the start of the time response window and to
33 automatically elapse after the predetermined time.
34 Alternatively it may optionally also be expedient to indicate

1 the end of the time response window to the participant
2 communications devices by means of a text or picture message.
3 In the embodiment of Fig. 1 the communications device KE3
4 authorized to transmit sends the useful message NN2 to the
5 PTT server PS, which message indicates the end of the time
6 response window TU. This useful message NN2 includes the
7 speech message "The survey has now finished". As soon as the
8 PTT server PS has received this useful message NN2 it
9 forwards it to the communications devices KE1, KE2.

10
11 Once the time response window has ended, the communications
12 device authorized to transmit retrieves from the PTT server
13 status information which relates to the survey. The
14 communications device authorized to transmit inquires by
15 means of a result inquiry message how many communications
16 devices participated in the inquiry and how many decided on
17 the respectively admissible responses. The PTT server then
18 responds with at least one result response message and hereby
19 transmits the status information inquired about to the
20 communications device authorized to transmit. In the
21 embodiment of Fig. 1 the communications device KE3 requests,
22 with the result message VEQ, some status information with
23 respect to the survey from the PTT server PS. The PTT server
24 PS transmits the following status information to the
25 communications device KE3 by means of the result response
26 message VEA:

- 27 - number of communications devices which participated in the
28 survey: 3
- 29 - number of communications devices which provided their
30 specific request signal once in each case during the time
31 response window: 1
- 32 - number of communications devices which provided their
33 specific request signal twice in each case during the time
34 response window: 2

1
2 This status information is evaluated in the communications
3 device authorized to transmit by means of an evaluation unit.
4 One or more survey result(s) is/are compiled therefrom.
5 Alternatively the evaluation can also be made manually by the
6 user of the communications device authorized to transmit. In
7 the embodiment the evaluation device AWE of the communication
8 device KE3 evaluates the status information. The survey
9 result indicates that one of the three participant
10 communications devices KE1, KE2, KE3 voted "Yes" and two of
11 the three participant communications devices KE1, KE2, KE3
12 voted "No".

13
14 In a further step one or more survey result(s) can be
15 forwarded for example to the communications devices
16 participating in the survey. It can be expedient to transmit
17 one or more survey result(s) in text form, for example via
18 SMS (SMS - Short Message Service). In the present embodiment
19 of Fig. 1 the following useful message NN2 is forwarded as
20 the survey result by the communications device KE2 to the
21 communications devices KE1, KE3: "The result of the survey
22 is: NO".

23
24 Finally, the communications device authorized to transmit
25 again provides its transmission right to transmit useful
26 messages. For this purpose the communications device KE3
27 authorized to transmit sends a transmission end message ES to
28 the PTT server PS, whereupon the PTT server PS cancels the
29 exclusive transmission right.

30
31 Generation of the specific request signal may be triggered by
32 actuating a key on the communications device. The specific
33 request signal may be sent by means of a transmission unit.
34 It is advantageous in practice to use this key to also

1 provide the response signal. In Fig. 1 the respective request
2 signal FS is triggered by pressing the respective key ST1,
3 ST2, ST3 on the respective communications device KE1, KE2,
4 KE3. The respective key ST1, ST2, ST3 is housed inside the
5 respective management unit VAE1, VAE2, VAE3. The respectively
6 generated specific request signal FS is then sent by means of
7 the respective transmission unit SEE1, SEE2, SEE3. In Fig. 1
8 the respective response signal AWS1, AWS2, AWS3 is effected
9 by pressing the respective key ST1, ST2, ST3 of the
10 communications device KE1, KE2, KE3.

11
12 It is also possible with the method according to the
13 invention to carry out different types of surveys by sending
14 the specific request signal FS once or several times:

15
16 - Survey with Yes/No responses:

17 With this type of survey a Yes or No response is
18 anticipated. A Yes response can be indicated by sending the
19 specific request signal FS once. A No response can be
20 communicated in that no specific request signal FS is sent
21 during the time response window TU. In general the Yes/No
22 response signals can be generated in that both differ by
23 different combinations of sending and/or not sending one or
24 more request signal(s).

25
26 - Survey with a response from a plurality of possible
27 responses:

28 In this case the communications device participating in the
29 survey can provide one of the possible responses. The
30 response signal pertaining to a response consists of a
31 combination of sending and/or not sending one or more
32 request signal(s). A clear combination is selected for each
33 response signal. For example there are four responses to
34 choose from. In this case the first response is expressed

1 by sending the specific request signal FS once, the second
2 response by sending it twice, the third response by sending
3 it three times and the fourth response by sending it four
4 times during the time response window TU. According to Fig.
5 2, the responding communications device KE3 decides on the
6 third response and therefore sends its specific request
7 signal FS three times during the time response window TU
8 for its response signal AWS4.

9
10 - Survey with more than once response from a plurality of
11 possible responses:
12 In this case the participant communications device can
13 provide more than one response from a plurality of possible
14 responses during the time response window. The partial
15 response signal associated with a specific response
16 consists of a combination of sending and/or not sending one
17 or more request signal(s). To provide a plurality of
18 responses within the response signal, these partial
19 response signals are sequentially arranged one after the
20 other. To distinguish between the individual responses it
21 may be expedient to take into account a waiting time PT
22 between provision of the individual responses. In the
23 example of Fig. 3, there are four responses to choose from,
24 wherein the responses one and four are provided. For this
25 purpose communications device KE2 sends the first partial
26 response signal AWS5A, which consists of a single specific
27 request signal FS. After a waiting pause PT, for example of
28 two seconds, the communications device KE2 signals its
29 second partial response signal AWS5B, i.e. response four,
30 by sending its specific response signal FS four times. The
31 response signal AWS5 for this survey is thus composed of
32 the first partial response signal AWS5A, followed by a
33 waiting time PT and subsequently of the second partial

1 response signal AWS5B. This response signal AWS5 is
2 provided during the time response window TU.

3
4 - Survey with rows of text or letters as the response:

5 In this case one or more letter(s) and/or number(s) are
6 provided as the response. For example a question is asked
7 about a specific year or the name of a prominent actor. For
8 this purpose the participant communications device can
9 provide its respective response signal in that a clear
10 combination of sending and/or not sending of the specific
11 request signal FS is clearly allocated to each letter
12 and/or each number. Using sequential transmission of a
13 plurality of letters and/or numbers corresponding rows of
14 letters and/or numbers may also be formed. This clear
15 allocation can for example be produced in the form of a
16 Morse code. Alternatively or additionally the letters
17 and/or numbers can be input with the aid of a keypad,
18 wherein a letter and/or a number is potentially allocated
19 to a specific key on the keypad. By actuating a key a
20 letter and/or number is reproduced in the form of a clear
21 combination of sending and/or not sending of the specific
22 request signal. As an example, a question is asked in a
23 survey about a date which consists of four numbers, for
24 example 1992. If the respective communications device is in
25 the form of a mobilephone according to the GSM standard
26 and comprises a 3 x 4 keypad, this keypad thus reproduces
27 *inter alia* the numbers 0 to 9 with a separate key in each
28 case. When a key is actuated a clear combination of sending
29 and/or not sending of the specific request signal FS is
30 generated and transmitted. By pressing the keys "1", "9",
31 "9" and "2" the corresponding response signal to the survey
32 is provided.

33

1 In practice it may be expedient to correct one or more
2 response signal(s) during the time response window. According
3 to Fig. 4 a provided response signal AWS may be corrected in
4 that a further response signal corrects the provided response
5 signal after a waiting time WT following provision of a
6 response signal. In the present example the response signal
7 AWS6 is firstly provided by sending the specific request
8 signal FS three times. After the waiting time WT, such as
9 three seconds, this is overwritten by the further response
10 signal AWS7 which consists of sending the specific request
11 signal FS once. The response signals AWS6, AWS7 were provided
12 during the time response window TU.

13
14 According to a further alternative development, it may be
15 expedient to cancel one or more provided response signal(s)
16 during the time response window TU. According to Fig. 5, a
17 clear combination of sending and/or not sending of the
18 specific request signal is used as the clearing signal. For
19 example in a survey in which a response signal AWS8 has
20 already been provided by sending the specific request signal
21 FS once, cancellation is possible by providing the clearing
22 signal AWS9. The clearing signal AWS9 is produced by four
23 specific request signals FS sent in quick succession.

24
25 As an alternative to evaluation of the response signal by way
26 of the communications device authorized to transmit,
27 evaluation may also take place by way of the PTT server. For
28 this purpose the communications device authorized to transmit
29 transmits a result request signal to the PTT server once the
30 time response window has ended. The PTT server thereupon
31 evaluates one or more item(s) of status information which
32 relate(s) to the survey and establishes one or more survey
33 result(s). It then sends one or more survey result(s) by
34 means of at least one result response signal to the

1 communications device authorized to transmit. Alternatively
2 the PTT server can distribute the survey result directly to
3 the communications devices participating in the survey.
4 According to Fig. 1 the communications device KE3 requests
5 the survey result from the PTT server PS by means of the
6 result request signal VSQ. The PTT server PS then sends the
7 survey result to the communications device KE3 by means of
8 the result response signal VEA.

9
10 In a further embodiment the communications device authorized
11 to transmit can ask the PTT server, PS for example in this
12 case, to transmit current status information during the
13 survey. This can take place by means of the survey status
14 message, VSQ for example in this case. During the survey
15 actually occurring status information on the survey is
16 accordingly communicated to the communications device
17 authorized to transmit. The communications device, which has
18 just provided its response signal or/and its specific request
19 signal FS, provides this status information.

20
21 In a possible additional embodiment it is possible during the
22 survey to restrict or extend specific control and/or request
23 functions in the communications devices participating in the
24 survey. For example it may be advantageous for communications
25 devices authorized to receive, for example KE1, KE2, to not
26 be able to request status information from the PTT server,
27 for example PS, about the progression of the survey. This may
28 include the request as to how often a specific communications
29 device has sent its specific request signal, such as FS,
30 during the time response window, for example TU.

31
32 Furthermore it may be expedient for specific functions within
33 the PTT server to be blocked or activated. Thus it may be
34 advantageous in practice that no additional communications

1 devices are incorporated into the survey by the PTT server
2 during the time response window, for example TU.

3

4